Assignment No 12

Estimate Trade-off Between Price and Quality for Product 1 or 2

1. Assignment Description

Demand for products in the Green State is the result of the products' price point and product quality. The tradeoff between price and quality is a fundamental issue. The higher the product quality the higher the price customers will be willing to pay for it. The purpose of the current assignment is to measure the trade-off between price and quality. In order to estimate this trade-off, a regression of the demand curve which includes both price and quality measurement should be estimated. The ratio between the price coefficient and the quality coefficient provides an estimation of the trade-off between price and quality.

2. Background Theory

The demand curve may be depicted with the following structure:

$$Q = \alpha_1 D_1 + \alpha_2 D_2 + \alpha_3 D_3 + \alpha_4 D_4 + \beta P + \gamma E$$

Where the symbols are:
P = Product price
Q = Product quantity sold
Di = Dummy variables for each quarter
E = Quality of product

Estimation should be by using OLS standard procedure.

3. Data Source

- Build a single firm with average technology
- Invest in product improvement on several levels
- Generate production of 30,000 units
- Send the products to the target region
- Set the price for the product in the target region
- Run simulations
- Record the quantity of product sold in the region
- Repeat the last three steps several times, covering the relevant price ranges. On each run record the quantity sold. Ensure some quantity is left unsold to ensure that physical limitations do not affect sales.

4. Analysis Required

a. Run a linear regression analysis using the functional forms as describes is section 2.
b. Discuss the quality of the resulting regression by comparing the R^2, F values and the P values of the repressors' coefficients.
c. Calculate the elasticity of each of the demand curves. What do the results mean?
d. Compare the ratio between the confidents of P and E at the estimated function. What does this ratio mean?